Beach Closings

Background

Beaches are monitored regularly by health or enforcement agencies to make sure they are safe, and may be closed at any time at the agencies' discretion to protect the public's health and safety. In New Jersey, beaches are monitored through the Cooperative Coastal Monitoring Program (CCMP), which is comprised of the New Jersey Department of Environmental Protection, the New Jersey Department of Health and Senior Services, and various county and municipal health departments. Partial funding for the CCMP comes from the United States Environmental Protection Agency Beaches Environmental Assessment and Coastal Health (BEACH) Act grants.[1] All analysis is conducted by DEP-certified laboratories, and results generally are available within 24 hours of sampling.

As one component of New Jersey's CCMP, bathing beaches are tested on Mondays from mid-May through mid-September for fecal indicator bacteria. Fecal waste from humans and animals may contain microorganisms that can cause illness if contaminated water is accidentally ingested during bathing or watersport activities. Fecal contamination is determined by testing water for the presence of certain indicator bacteria, such as fecal coliforms and enterococci, which always are present in untreated fecal wastes. The presence of fecal indicator bacteria does not by itself indicate disease-causing organisms are present; it does indicate that fecal waste has contaminated the water to some degree, and that therefore disease-causing organisms could be present. From the inception of the CCMP in 1974 through 2003, samples were analyzed for fecal coliform bacteria concentrations, but beginning in 2004 the EPA BEACH Act[2] required samples to be analyzed for enterococcus instead.

The CCMP monitored water quality at 187 ocean stations and 139 bay stations in 2002, 2003 and 2004, most of which were at recreational beaches. The environmental stations not located at recreational beaches are used to assess water quality trends only, whereas recreational stations are sampled to assess trends and to protect recreational bathers from polluted water. Most ocean stations are located at several lifeguarded beaches in areas of contiguous, similar beaches with no likely pollution sources. Individual beaches are assigned stations to monitor effects from potential pollution sources.

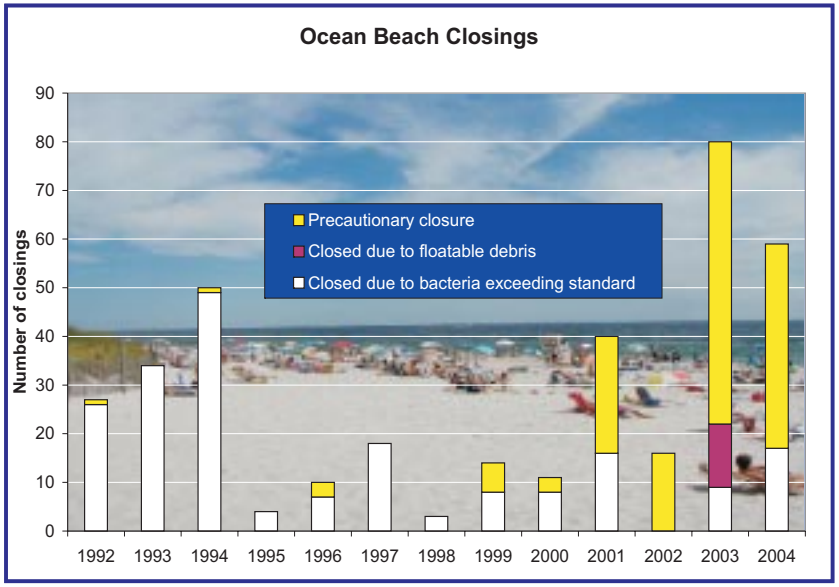
Ocean and bay recreational beaches will be closed when, during routine sampling, bacteria concentrations exceed 104 enterococci per 100 milliliters in two consecutive samplings. The beach will remain closed until a consecutive sample is obtained that is within the standard. Sampling is always performed in conjunction with a sanitary survey, which includes identifying possible pollution sources and observing water and shoreline conditions.

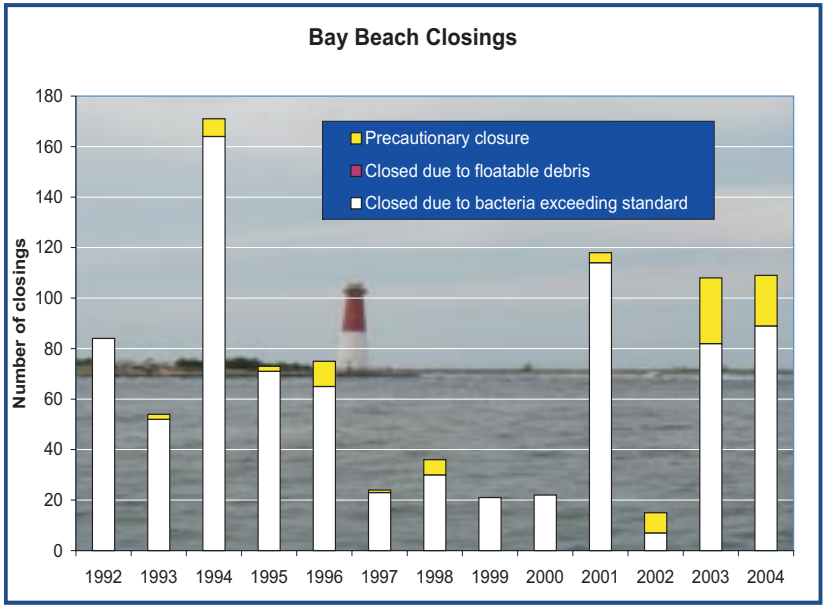
Status and Trend

Beach Closings

The charts below show the numbers of closings from 1992 through 2004. Note that in recent years, the total number of beaches closed has included a relatively large portion closed for precautionary reasons only. Detailed beach closing information, including the specific beaches closed and reasons for the closings for this period, can be found in the CCMP Annual Report.[3] Data from the 1980s shows much higher yearly rates of beach closings. In 1988, for example, ocean beaches were closed over 800 times. Many of these closings were due to bacteria exceeding the standard. Improvements and upgrades to sewage treatment plants discharging to the ocean have largely corrected this problem. Some of the closings were also due to floatables. Tighter controls on waste handling, including procedures mandated by the New Jersey's 1989 Comprehensive Regulated Medical Waste Management Act, have largely ended these problems.

Closings include those required for consecutive high fecal coliform or enterococci concentrations and by health agencies due to public health concerns. The majority of the closings in the above-listed years were related to the presence of contaminated stormwater. Stormwater is frequently contaminated by pet waste or droppings of wild animals, such as geese. In 1990, there were 10 separate beach closings because of floatable debris. In the following 12 years, no closings occurred due to floatables. However, in 2003, 13 separate closings were due to reported wash-ups of trash and medical waste.





Surface Water Quality Standard Exceedances

Before 2004, DEP Surface Water Quality Standards (SWQS) required that the fecal coliform concentrations not exceed a geometric mean of 50 fecal coliforms per 100 ml of sample. The geometric mean, or average, is calculated at the end of the bathing season and uses the entire set of sampling data collected during the season. Bay waters that lie within the CCMP area from Raritan Bay to Delaware Bay must not exceed a geometric average of 200 fecal coliforms per 100 ml of sample. In 2004, the geometric mean for enterococci is 35 enterococci per 100 mL of sample. For the CCMP, all samples taken from a monitoring station during the summer sampling season are averaged geometrically and compared to the standard. The table below presents the number of monitoring stations that exceeded the respective surface water quality standard in 2002, 2003, and 2004.

Ocean Stations	Fecal Coliform Average	Fecal Coliform SWQS Standard	Enterococcus Average	Enterococcus SWQS Standard
2002 - none		50		
2003 - none		50		
2004 – Brown Ave., Spring Lake			39.3	35
Bay Stations		Fecal Coliform Average	SWQS Standard	
2002 - none		200		
2003 – Windward Beach, Brick	288.1	200		
West Beach, Beachwood	277.7			
East Beach, Beachwood	251.9			
2004 – L Street, Belmar			47.7	35
Reese Ave., Lavallette			47.3	
Brooklyn Ave., Lavallette			42	
Hancock Ave., Seaside Hts			71.7	
*Stockton Ave., Long Beach Twp			35.9	
*New Jersey Ave., Long Beach Twp.			55	
Maxon Ave., Pt. Pleasant			44.4	
River Ave., Pt. Pleasant			42.3	
Money Island, Dover			239.4	
Shelter Island, Dover			53.9	
Central Ave., Island Hts.			109.6	
West Beach, Beachwood			291.6	
East Beach, Beachwood			208.2	
Station Road, Pine Beach			54.8	
Avon Road, Pine Beach			71.7	
Wildwood Rd. Ocean Gate			39.5	
Anglesea Ave., Ocean Gate			57.6	
Amhearst Dr., Berkeley			39.7	
Parkertown Beach, Little Egg Harbor			41.8	
*25th St., Barnegat Light			85.9	

* These stations were affected by the growth of unidentified bacteria colonies which were later identified as *Aerococcus viridans* and therefore the geometric means may not be accurate.

Outlook and Implications

The increase in ocean and bay beach closings in the 2001, 2003 and 2004 summer seasons may be attributed to frequent periods of intense rainfall, which resulted in stormwater discharges. The ocean beaches of Spring Lake were particularly affected by the increase in Wreck Pond discharge. The volume of flow through the Wreck Pond watershed caused significant flows that carried an extraordinary amount of bacteria-laden sediment to the ocean. All of Spring Lake's beaches were affected for two days in August 2001. In 2002, a precautionary beach-closing plan was implemented in Spring Lake that requires the two beaches north of the Wreck Pond outfall, Brown Avenue and York Avenue, close for a specified time period after rainfall. The bathing areas of the two beaches are automatically closed for 24 hours after the end of all rainfalls greater than .1 inch or an increased flow in storm drains and for 48 hours after rainfalls greater than 2.8 inches within a 24-hour period. In addition, lifeguards (or staff as designated by Spring Lake) will prohibit swimming near any parts of these beaches where the stormwater plume is observed to be mixing within the swimming area. In 2002, Brown Avenue and York Avenue beaches were closed a total of eight times, in 2003 a total of 26 times and in 2004 the beaches were closed a total of 21 times as required by the rainfall policy.

Sources of pollution to the pond include stormwater discharges directly to the pond, a large migratory and non-migratory bird population, pet waste and lawn fertilizers. All of these factors contribute to the eutrophication of the pond and to the elevated levels of fecal coliform bacteria discharged to the ocean when it rains. Sediment in Wreck Pond has been analyzed and been found to contain high concentrations of fecal coliform bacteria. The Division of Watershed Management currently is working with local stakeholders to address the elevated bacteria levels in the pond.

New stormwater rules now in place in New Jersey are expected to reduce the impacts of stormwater on coastal regions as well as elsewhere in the state. Two sets of new stormwater rules were adopted in February 2004. The first set of rules is intended to address and reduce pollutants associated with existing stormwater runoff. The second set of regulations sets forth the required components of regional and municipal stormwater management plans, and establishes the stormwater management design and performance standards for new development.[4]

More Information

The DEP has a Web page featuring ocean water-quality information and links to county health departments and other coastal-related Web sites. The site lists any ocean beaches that are closed due to low water quality and any special beach conditions. The Web site can be accessed either through DEP's homepage at www.state.nj.us/dep, which has an icon for Ocean Beach Information, or directly at www.NJBeaches.org.

References

[1] Beaches Environmental Assessment and Coastal Health (BEACH) Act, October 10, 2000 (which amended the Clean Water Act).

[2] USEPA. 1999. Action Plan for Beaches and Recreational Waters. EPA/600/R-98/079, USEPA, ORD, Washington, DC.

[3] NJDEP. Cooperative Coastal Monitoring Program - Summary Report for 2001, 2002, and 2003. Division of Watershed Management, Atlantic Coastal Region.

[4] See http://www.nj.gov/dep/stormwater/